The header features the words 'SCIENCE' and 'SPARKS' in large, stylized, blocky letters. The letters are colored in alternating blue and yellow, with white snow-like caps on top. The background is a light blue cloud-like shape. Surrounding the text are various decorative elements: a yellow crescent moon, a red hat, yellow stars, red and green leaves, a white cloud, snowflakes, a holly leaf with red berries, and a red and white striped candy cane.

# SCIENCE SPARKS

christmas science experiments for Kids!



Emma Vanstone

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# colourful candy



This is a fun kitchen science experiment to demonstrate dissolving! The colour from the skittles dissolves into the water giving a lovely colourful effect. If you look carefully you might even see a floating "S" on the top of the water.

## Materials!

Flat dish  
Skittles  
Warm water



## Method!



- Place some skittles into your dish.
- Pour some warm water over the top.

Watch the colour coating of the skittles dissolve into the water



## Discuss!

Does the whole skittle dissolve if you leave it long enough?



## Extension Tasks...

- Can you try an M & M?
- Does cold water work as well as hot water?







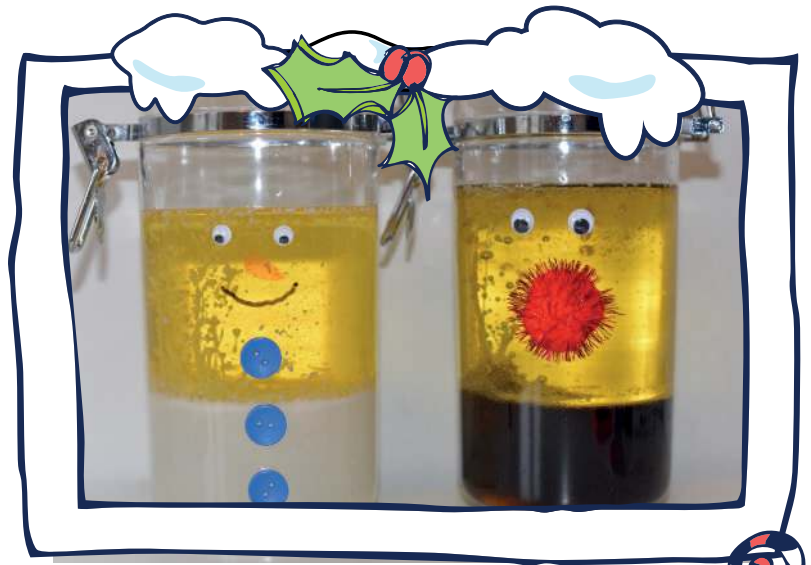
# Lava Lamps



Lava lamps are a simple but great fun science activity for kids using simple materials you probably already have in your kitchen cupboard. They are a great way to learn about liquids having different densities and chemical reactions.

## Materials!

clear jar or bottle  
Water  
Food colouring  
Alka Seltzer  
Vegetable oil



## Method!



- Fill the bottle or jar about  $\frac{1}{3}$  full of water, add food colouring.
- Fill to almost the top with vegetable oil
- Drop an alka seltzer into the jar and watch the fizz.



## Discuss!



Why does the oil sit on top of the water?

## Extension Tasks...



- What happens if you use two alka seltzers?
- If you shake your jar what happens?







# Jumping Snowmen



Did you know some materials such as wool and plastic attract each other when rubbed together? This is called static electricity. If you rub a balloon on your hair, it makes tiny particles pass from your hair to the balloon causing a build up of static electricity, which pulls on the tissue paper lifting it up in the air.

## Materials!

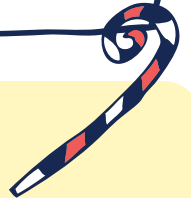
Balloon  
Tissue paper  
Woolly Jumper or hair  
Scissors



## Method!



- Blow up a balloon
- cut tissue paper into snowman shapes
- Rub the balloon on your hair or a woolly jumper.
- Hold the balloon over your tissue paper snowmen.



## Discuss!



How long does it take  
for the charge  
to wear off?

## Extension Tasks...



- What happens if you try normal paper?
- Do fabrics other than wool work?





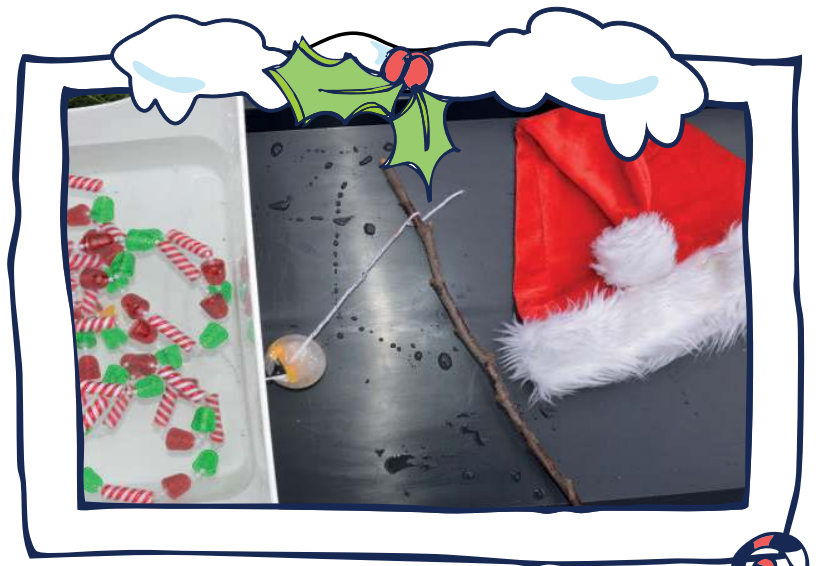
# Ice fishing



The aim of the activity is to discover whether ice melts faster in hot or cold water, using fish frozen into snowball shaped ice cubes. Freeze some string into the ice and tie to a long stick to make your fishing rod.

## Materials!

2-3 Tubs  
Hot and cold water  
Plastic fish  
Sticks  
ice cube trays



## Method!



Pour water into ice cube trays and add small toy fish.

Add a piece of string to each and place in the freezer.

Once frozen remove and tie a stick to the end of the string, this is your fishing rod.

Set up three tubs of water, hot, warm and cold.

Hold a different rod into each tub and time how long it takes for the fish to become free.



## Discuss!



How does the ice change over time?

## Extension Tasks...



- can you predict which will melt first?
  - How could you speed up the ice melting?
  - can you record the water temperature?
- Does it change as the ice melts?





# How strong is a Gingerbread House?



This is a great science activity you can combine with some lovely seasonal baking. Or if you don't fancy baking you could use three rectangular biscuits and make a triangle shape.

## Materials!

Gingerbread pieces  
Icing Sugar  
Sweets



## Method!



- Use your gingerbread pieces to construct a house shape.
- Fix the house together using icing sugar.
- Leave overnight to harden.
- Test for strength by rolling a marble at the house.



## Discuss!



How else could you test your house?

## Extension Tasks...



- What other sticky substances could you test?
- Try making the icing sugar thicker.
- Can you pick your house up?







# Optical Illusions



This clever optical illusion lets you turn two pictures into one. If you draw two pictures and spin them very quickly, it gives the illusion of one picture.

## Materials!

White cardboard  
Felt tip pens  
Straw  
Sellotape



## Method!

- Cut out two shapes from a sheet of white cardboard.
- Draw a Christmas tree on one shape and decorations on the other.
- Glue or sellotape a pencil between the two pictures.
- Hold the pencil between your palms and spin around.

## Discuss!

Can you think of a practical application for this?

## Extension Tasks...

- Can you draw a different illusion?  
How about a fireplace and a Santa?





# christmas Flowers



Did you know you can add some colour to white flowers using food colouring? Water is transported up the stem of a plant via a process called transpiration. It's a bit like water being sucked up a straw. This can be demonstrated by adding food colouring to the water a flower is placed in.

## Materials!

Water  
Food colouring  
White flowers such as  
carnations



## Method!



- Trim the flowers leaving a short stem
- Add water and food colouring to a jar or vase.
- Place your flowers into the water and wait.
- You should see colour reach the petals after a couple of hours.



## Discuss!



can you try this with  
celery?

## Extension Tasks...

- Try splitting the stem in half, place one half in red food colouring and one in green, what happens?



Note: Natural food colourings do not work





# Santa's Parachute



Parachutes are a great way to learn about air resistance. If you drop a lego man and a piece of paper from the same height the paper will drop more slowly because it has a larger surface area and so has to push against more air as it drops. The air resistance is greater and so it drops more slowly. Your parachute should slow the descent of the figure you test it with.

## Materials!

Christmas Paper  
Christmas Material  
String  
Small Christmas figure  
Scissors



## Method!



- Cut a large square from your paper or material.
- Make a hole in each corner
- Cut 4 pieces of string the same length and tie one to each corner.
- Fasten the other end of each string to your figure.



## Discuss!



Does a larger parachute work better?  
How can you make it a fair test?

## Extension Tasks...



- Try different materials and time the descent of the parachutes.
- Which work the best?







# Ice Decorations



These ice decorations are super easy to make and look great. We used a cake mould to get a fun star shape and added some LEGO pieces to make it more colourful.

Water can be a solid, liquid or gas. In liquid form the water particles can move around freely, so the water takes the shape of the container it is in. When you cool water down the movement of the particles slow down and the particles become tightly packed together, which means its shape cannot change easily.

## Materials!

Decorations  
Freezer  
String  
Mould  
Water



## Method!



- Carefully pour cold water into your mould.
- Add your decorations.
- Tie the string at one end and place into the water.
- Put the mould in a freezer until frozen.



## Discuss!



Why do think ice is sticky?

## Extension Tasks...



- Try leaving a water filled mould outside on a cold day to see if it freezes.
- Try leaving frozen decorations in different locations to see which melt first.





# Fizzy Snowballs



Vinegar (an acid) and bicarbonate of soda (an alkali) react together to neutralise each other. This reaction releases carbon dioxide, a gas, which is the bubbles you see when you add vinegar to your baking soda snowballs.

## Materials!

Water  
Baking soda  
Vinegar  
Christmas objects



## Method!



- Pour the baking soda into a bowl and add water little by little until you get a thick paste.
- Mould into snowball shapes and leave in a fridge for a couple of hours.
- Remove from the fridge and gently drop vinegar on top.



## Discuss!



This is an example of a chemical reaction.

## Extension Tasks...



- What other shapes can you make?
- Try adding baking soda to water to make fizzy ice!





# Minty chocolate Leaves



These easy minty chocolate leaves are a fun way to learn about changes of state. Making the leaves demonstrates the melting process (solid to liquid) and cooling (liquid to solid).

## Materials!

Mint Leaves  
chocolate  
Plate  
Bowl  
Pan of hot water



## Method!



- Put the chocolate in your bowl and then place the bowl over a pan of hot water.
- Stir the chocolate until melted.
- Check the chocolate is not too hot and dip your leaves into the chocolate covering one side.
- Leave in the fridge to cool, once set peel the chocolate carefully from your leaves.



## Discuss!



Can you see the imprint  
of the leaves in the chocolate.

## Extension Tasks...



- Try adding butter or golden syrup to the chocolate, does it change the time taken for the chocolate to set?



Be very careful with the hot chocolate and water







# Balancing Out



Find out how the weight of different christmas decorations compare to each other with this fun activity.

## Materials!

coat hanger  
2 empty plastic cups  
string  
christmas decorations



## Method!



- cut 4 pieces of string to the same length.
- Tie a piece of string to each side of both cups.
- Attach one container to each end of the coat hanger.
- Add objects into the containers? What happens?



## Discuss!



Did you know the force pulling down on an object is called gravity?

## Extension Tasks...

- can you get the containers to hang level?



## Top Tips for Science at Home

### 1. KEEP IT SIMPLE

Science at home doesn't have to be complicated or expensive, you can create fun and exciting activities for children of all ages with the contents of your kitchen cupboards.

### 2. DON'T PANIC

An experiment not working is part of the fun, as long as you talk about why it didn't work and maybe plan an alternative. In fact, devising experiments is an experiment in itself. We have learned a lot just creating the activities in this book. Experiment with experimenting.

### 3. HAVE FUN

With the best will in the world, sometimes people just aren't in the mood. Just do your best and keep it light hearted. The idea is to spend time doing something with your children, if it stops being fun, move on to something else. There's no pressure here (except when we're discussing balloons).

Science Sparks takes no responsibility for any injuries received as a result of trying our investigations and experiments. We advise that children should be supervised at all times, especially for the kitchen science experiments.

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For more science activity ideas  
check out

christmas science Experiments for Kids!

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